

University of Nebraska - Lincoln

## DigitalCommons@University of Nebraska - Lincoln

---

Nebraska Tractor Tests

Tractor Test and Power Museum, The Lester F.  
Larsen

---

January 2007

### Test 1899A: Case-IH Magnum 245 and MX 245 Diesel 19-Speed

Tractor Museum

*University of Nebraska-Lincoln*, [TractorMuseumArchives@unl.edu](mailto:TractorMuseumArchives@unl.edu)

Follow this and additional works at: <https://digitalcommons.unl.edu/tractormuseumlit>



Part of the [Applied Mechanics Commons](#)

---

Museum, Tractor, "Test 1899A: Case-IH Magnum 245 and MX 245 Diesel 19-Speed" (2007). *Nebraska Tractor Tests*. 2075.

<https://digitalcommons.unl.edu/tractormuseumlit/2075>

This Article is brought to you for free and open access by the Tractor Test and Power Museum, The Lester F. Larsen at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Nebraska Tractor Tests by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

# NEBRASKA OECD TRACTOR TEST 1899A—SUMMARY 566A

## CASE IH MAGNUM 245 DIESEL

## ALSO CASE IH MX 245 DIESEL

### 19 SPEED

#### POWER TAKE-OFF PERFORMANCE

| Power<br>HP<br>(kW)                     | Crank<br>shaft<br>speed<br>rpm | Gal/hr<br>(l/h)  | lb/hp.hr<br>(kg/kW.h) | Hp.hr/gal<br>(kW.h/l) | Mean Atmospheric<br>Conditions |
|---|--------------------------------|------------------|-----------------------|-----------------------|--------------------------------|
| MAXIMUM POWER AND FUEL CONSUMPTION      |                                |                  |                       |                       |                                |
| Rated Engine Speed—(PTO speed—1109 rpm) |                                |                  |                       |                       |                                |
| 203.97<br>(152.10)                      | 2000                           | 12.55<br>(47.50) | 0.431<br>(0.262)      | 16.26<br>(3.20)       |                                |
| Maximum Power (1 hour)                  |                                |                  |                       |                       |                                |
| 242.84<br>(181.08)                      | 1800                           | 14.70<br>(55.65) | 0.424<br>(0.258)      | 16.52<br>(3.25)       |                                |
| Standard Power Take-off Speed (998 rpm) |                                |                  |                       |                       |                                |
| 242.84<br>(181.08)                      | 1800                           | 14.70<br>(55.65) | 0.424<br>(0.258)      | 16.52<br>(3.25)       |                                |

#### VARYING POWER AND FUEL CONSUMPTION

|                    |      |                  |                    |                 |                       |
|--------------------|------|------------------|--------------------|-----------------|-----------------------|
| 203.97<br>(152.10) | 2000 | 12.55<br>(47.50) | 0.431<br>(0.262)   | 16.26<br>(3.20) | Air temperature       |
| 179.81<br>(134.09) | 2076 | 12.07<br>(45.68) | 0.470<br>(0.286)   | 14.90<br>(2.94) | 82°F (28°C)           |
| 137.76<br>(102.72) | 2120 | 11.20<br>(42.38) | 0.570<br>(0.347)   | 12.30<br>(2.42) | Relative humidity     |
| 93.25<br>(69.54)   | 2158 | 8.94<br>(33.85)  | 0.672<br>(0.409)   | 10.43<br>(2.05) | 17%                   |
| 47.52<br>(35.44)   | 2199 | 6.38<br>(24.13)  | 0.941<br>(0.572)   | 7.45<br>(1.47)  | Barometer             |
| 1.60<br>(1.20)     | 2249 | 4.28<br>(16.20)  | 18.719<br>(11.386) | 0.37<br>(0.07)  | 28.83" Hg (97.63 kPa) |

Maximum torque - 820 lb.-ft. (1112 Nm) at 1349 rpm  
Maximum torque rise - 53.2%  
Torque rise at 1597 engine rpm - 45%  
Power increase at 1800 engine rpm - 19.1%

#### DRAWBAR PERFORMANCE

#### UNBALLASTED - FRONT DRIVE ENGAGED

#### FUEL CONSUMPTION CHARACTERISTICS

| Power<br>Hp<br>(kW)                          | Drawbar<br>pull<br>lbs<br>(kN) | Speed<br>mph<br>(km/h) | Crank-<br>shaft<br>speed<br>rpm | Slip<br>% | Fuel Consumption<br>lb/hp.hr<br>(kg/kW.h) | Hp.hr/gal<br>(kW.h/l) | Temp. °F (°C)<br>cool-<br>ing<br>med | Air<br>dry<br>bulb | Barom.<br>inch<br>Hg<br>(kPa) |
|--|--------------------------------|------------------------|---------------------------------|-----------|---|-----------------------|--------------------------------------|--------------------|-------------------------------|
| Maximum Power—7th Gear                       |                                |                        |                                 |           |   |                       |                                      |                    |                               |
| 172.67<br>(128.76)                           | 14919<br>(66.36)               | 4.34<br>(6.99)         | 1993                            | 3.59      | 0.508<br>(0.309)                          | 13.81<br>(2.72)       | 187<br>(86)                          | 59<br>(15)         | 28.86<br>(97.73)              |
| 75% of Pull at Maximum Power—7th Gear        |                                |                        |                                 |           |   |                       |                                      |                    |                               |
| 137.91<br>(102.84)                           | 11220<br>(49.91)               | 4.61<br>(7.42)         | 2090                            | 2.32      | 0.590<br>(0.359)                          | 11.89<br>(2.34)       | 187<br>(86)                          | 68<br>(20)         | 28.85<br>(97.70)              |
| 50% of Pull at Maximum Power—7th Gear        |                                |                        |                                 |           |   |                       |                                      |                    |                               |
| 95.32<br>(71.08)                             | 7474<br>(33.24)                | 4.78<br>(7.70)         | 2149                            | 1.44      | 0.734<br>(0.447)                          | 9.55<br>(1.88)        | 187<br>(86)                          | 68<br>(20)         | 28.85<br>(97.70)              |
| 75% of Pull at Reduced Engine Speed—9th Gear |                                |                        |                                 |           |   |                       |                                      |                    |                               |
| 137.90<br>(102.83)                           | 11213<br>(49.88)               | 4.61<br>(7.42)         | 1580                            | 2.28      | 0.533<br>(0.324)                          | 13.14<br>(2.59)       | 185<br>(85)                          | 69<br>(21)         | 28.85<br>(97.70)              |
| 50% of Pull at Reduced Engine Speed—9th Gear |                                |                        |                                 |           |   |                       |                                      |                    |                               |
| 95.06<br>(70.89)                             | 7473<br>(33.24)                | 4.77<br>(7.68)         | 1620                            | 1.41      | 0.586<br>(0.357)                          | 11.96<br>(2.36)       | 184<br>(84)                          | 69<br>(21)         | 28.85<br>(97.70)              |

**Location of tests:** Nebraska Tractor Test Laboratory, University of Nebraska, Lincoln, Nebraska 68583-0832

**Dates of tests:** May 1 - 18, 2007

**Manufacturer:** CNH America LLC, 700 State St. Racine, Wi. 53404 USA

**FUEL, OIL and TIME:** Fuel No. 2 Diesel Specific gravity converted to 60°/60°F (15°/15°C) 0.8432 Fuel weight 7.011 lbs/gal (0.840 kg/l) Oil SAE 15W40 API service classification CI-4 Transmission and hydraulic lubricant Case IH Hy-Tran Ultra fluid Front axle lubricant SAE 85W-140 API GL-5 Total time engine was operated: 23.5 hours

**ENGINE: Make** CNH Engine Corporation Diesel **Type** six cylinder vertical with turbocharger and air to air intercooler **Serial No.** \*46699186\* **Crankshaft** lengthwise **Rated engine speed** 2000 **Bore and stroke** 4.488" x 5.315" (114.0 mm x 135.0 mm) **Compression ratio** 17.5 to 1 **Displacement** 505 cu in (8268 ml) **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements and aspirator **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** two paper elements **Fuel cooler** radiator for pump return fuel **Muffler** vertical **Cooling medium temperature control** 2 thermostats and variable speed fan

**ENGINE OPERATING PARAMETERS: Fuel rate:** 83.6-91.9 lb/h (37.9 - 41.7 kg/h) **High idle:** 2220-2260 rpm **Turbo boost:** nominal 21.0 - 25.4 psi (145 - 175 kPa) as measured 22.1 psi (153 kPa)

**CHASSIS: Type** front wheel assist **Serial No.** \*Z7RZ01445\* **Tread width** rear 64.0" (1626 mm) to 129.0" (3277 mm) front 60.0" (1524 mm) to 88.0" (2235 mm) **Wheelbase** 118.3" (3005 mm) **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio with full range operator controlled powershift **Nominal travel speeds mph (km/h)** first 1.97 (3.17) second 2.26 (3.64) third 2.60 (4.19) fourth 2.99 (4.81) fifth 3.43 (5.52) sixth 3.93 (6.33) seventh 4.59 (7.38) eighth 5.26 (8.47) ninth 6.06 (9.77) tenth 6.96 (11.20) eleventh 7.98 (12.85) twelfth 9.16 (14.74) thirteenth 11.41 (18.37) fourteenth 13.09 (21.07) fifteenth 15.10 (24.30) sixteenth 17.32 (27.87) seventeenth 19.87 (31.97) eighteenth 22.79 (36.67) nineteenth 24.86 (40.00) (1750 engine rpm) reverse 2.83 (4.56), 3.26 (5.24), 6.61 (10.63), 7.57 (12.19) **Clutch** multiple wet disc electrohydraulically operated by foot pedal **Brakes** wet disc hydraulically operated by two foot pedals that can be locked together **Steering** hydrostatic **Power take-off** 540 rpm at 1806 engine rpm or 1000 rpm at 1803 engine rpm **Unladen tractor mass** 21010 lb (9530 kg)

**DRAWBAR PERFORMANCE**  
**UNBALLASTED - FRONT DRIVE ENGAGED**  
**MAXIMUM POWER IN SELECTED GEARS**

| Power<br>Hp<br>(kW) | Drawbar<br>pull<br>lbs<br>(kN) | Speed<br>mph<br>(km/h) | Crank-<br>shaft<br>speed<br>rpm | Slip<br>% | Fuel Consumption<br>lb/hp.hr<br>(kg/kW.h) | Consumption<br>Hp.hr/gal<br>(kW.h/l) | Temp. °F (°C)<br>cool-<br>ing<br>med | Air<br>dry<br>bulb | Barom.<br>inch<br>Hg<br>(kPa) |
|---------------------|--------------------------------|------------------------|---------------------------------|-----------|---|--------------------------------------|--------------------------------------|--------------------|-------------------------------|
| 5th Gear            |                                |                        |                                 |           |   |                                      |                                      |                    |                               |
| 161.48<br>(120.42)  | 20129<br>(89.54)               | 3.01<br>(4.84)         | 1990                            | 10.38     | 0.541<br>(0.329)                          | 12.96<br>(2.55)                      | 187<br>(86)                          | 53<br>(12)         | 28.86<br>(97.73)              |
| 6th Gear            |                                |                        |                                 |           |   |                                      |                                      |                    |                               |
| 177.96<br>(132.71)  | 19222<br>(85.50)               | 3.47<br>(5.59)         | 1934                            | 7.26      | 0.526<br>(0.320)                          | 13.34<br>(2.63)                      | 188<br>(86)                          | 55<br>(13)         | 28.86<br>(97.73)              |
| 7th Gear            |                                |                        |                                 |           |   |                                      |                                      |                    |                               |
| 196.18<br>(146.29)  | 18691<br>(83.14)               | 3.94<br>(6.33)         | 1864                            | 6.52      | 0.514<br>(0.313)                          | 13.64<br>(2.69)                      | 188<br>(87)                          | 60<br>(16)         | 28.86<br>(97.73)              |
| 8th Gear            |                                |                        |                                 |           |   |                                      |                                      |                    |                               |
| 203.30<br>(151.60)  | 17191<br>(76.47)               | 4.43<br>(7.14)         | 1800                            | 4.88      | 0.504<br>(0.306)                          | 13.92<br>(2.74)                      | 187<br>(86)                          | 62<br>(17)         | 28.86<br>(97.73)              |
| 9th Gear            |                                |                        |                                 |           |   |                                      |                                      |                    |                               |
| 204.43<br>(152.44)  | 14724<br>(65.50)               | 5.21<br>(8.38)         | 1809                            | 3.59      | 0.504<br>(0.307)                          | 13.90<br>(2.74)                      | 188<br>(87)                          | 64<br>(18)         | 28.86<br>(97.73)              |
| 10th Gear           |                                |                        |                                 |           |   |                                      |                                      |                    |                               |
| 206.69<br>(154.13)  | 12914<br>(57.44)               | 6.00<br>(9.66)         | 1803                            | 2.85      | 0.498<br>(0.303)                          | 14.07<br>(2.77)                      | 188<br>(87)                          | 65<br>(18)         | 28.86<br>(97.73)              |
| 11th Gear           |                                |                        |                                 |           |   |                                      |                                      |                    |                               |
| 204.10<br>(152.20)  | 11047<br>(49.14)               | 6.93<br>(11.15)        | 1805                            | 2.33      | 0.505<br>(0.307)                          | 13.87<br>(2.73)                      | 188<br>(87)                          | 66<br>(19)         | 28.86<br>(97.73)              |
| 12th Gear           |                                |                        |                                 |           |   |                                      |                                      |                    |                               |
| 203.55<br>(151.79)  | 9541<br>(42.44)                | 8.00<br>(12.88)        | 1810                            | 1.93      | 0.507<br>(0.308)                          | 13.83<br>(2.72)                      | 188<br>(86)                          | 67<br>(19)         | 28.85<br>(97.70)              |

**REPAIRS AND ADJUSTMENTS:** No repairs or adjustments.

**NOTE:** Report reprinted, supplemental permit for Case IH Magnum 245 Diesel, April, 2008.

**REMARKS:** All test results were determined from observed data obtained in accordance with official OECD, SAE and Nebraska test procedures. For the maximum power tests the fuel temperature at the primary fuel filter was maintained at 104°F (40°C). This tractor did not meet the manufacturer's remote hydraulic flow claims of 59 GPM (223 lpm), with high flow pump, nor 75 GPM (282 lpm), with twinflow pump. The pull in 2<sup>nd</sup> gear (ballasted tractor) was limited to avoid excessive tractor bouncing. The performance results on this summary were taken from OECD tests conducted under the Code II Test Code Procedure.

We, the undersigned, certify that this is a true and correct report of official Tractor Test No. **1899A**, Nebraska Summary 566A, May 21, 2008.

Roger M. Hoy  
Director

M.F. Kocher  
V.I. Adamchuk  
J.A. Smith  
Board of Tractor Test Engineers

**TRACTOR SOUND LEVEL WITH CAB**

|                        | dB(A) |
|------------------------|-------|
| At no load in 7th gear | 68.3  |
| Bystander in 18th gear | 86.6  |

**TIRES, BALLAST AND WEIGHT**

|  | With Ballast             | Without Ballast          |
|--|--------------------------|--------------------------|
| <b>Rear Tires</b> -No., size, ply & psi (kPa)  | Four 520/85R42;**,11(75) | Two 520/85R42;**,16(110) |
| <b>Ballast</b> - Duals (total)                 | 1950 lb (885 kg)         | None                     |
| - Cast Iron (total)                            | 3185 lb (1445 kg)        | None                     |
| <b>Front Tires</b> -No., size, ply & psi (kPa) | Two 420/90R30;**,19(130) | Two 420/90R30;**,15(105) |
| <b>Ballast</b> - Liquid (total)                | None                     | None                     |
| - Cast Iron (total)                            | 1100 lb (499 kg)         | None                     |
| <b>Height of Drawbar</b>                       | 18.0 in (455 mm)         | 17.5 in (445 mm)         |
| <b>Static Weight with operator</b> - Rear      | 17540 lb (7956 kg)       | 12985 lb (5890 kg)       |
| - Front  | 9880 lb (4481 kg)        | 8200 lb (3719 kg)        |
| - Total  | 27420 lb (12437 kg)      | 21185 lb (9609 kg)       |

**DRAWBAR PERFORMANCE**  
**BALLASTED - 1800 ENGINE RPM**  
**MAXIMUM POWER IN SELECTED GEARS**

| Power<br>Hp<br>(kW) | Drawbar<br>pull<br>lbs<br>(kN) | Speed<br>mph<br>(km/h) | Crank-<br>shaft<br>speed<br>rpm | Slip<br>% | Fuel Consumption<br>lb/hp.hr<br>(kg/kW.h) | Consumption<br>Hp.hr/gal<br>(kW.h/l) | Temp. °F (°C)<br>cool-<br>ing<br>med | Air<br>dry<br>bulb | Barom.<br>inch<br>Hg<br>(kPa) |
|---------------------|--------------------------------|------------------------|---------------------------------|-----------|---|--------------------------------------|--------------------------------------|--------------------|-------------------------------|
| 2nd Gear            |                                |                        |                                 |           |   |                                      |                                      |                    |                               |
| 146.91<br>(109.55)  | 26492<br>(117.84)              | 2.08<br>(3.35)         | 2058                            | 8.88      | 0.576<br>(0.351)                          | 12.16<br>(2.40)                      | 188<br>(86)                          | 56<br>(13)         | 28.93<br>(97.97)              |
| 3rd Gear            |                                |                        |                                 |           |   |                                      |                                      |                    |                               |
| 161.30<br>(120.28)  | 25473<br>(113.31)              | 2.37<br>(3.82)         | 2001                            | 7.20      | 0.537<br>(0.327)                          | 13.05<br>(2.57)                      | 188<br>(87)                          | 71<br>(22)         | 28.64<br>(96.99)              |
| 4th Gear            |                                |                        |                                 |           |   |                                      |                                      |                    |                               |
| 175.67<br>(130.99)  | 24741<br>(110.05)              | 2.66<br>(4.29)         | 1940                            | 6.44      | 0.536<br>(0.326)                          | 13.07<br>(2.58)                      | 188<br>(87)                          | 71<br>(22)         | 28.63<br>(96.95)              |
| 5th Gear            |                                |                        |                                 |           |   |                                      |                                      |                    |                               |
| 190.90<br>(142.35)  | 24243<br>(107.84)              | 2.95<br>(4.75)         | 1869                            | 6.11      | 0.532<br>(0.323)                          | 13.19<br>(2.60)                      | 189<br>(87)                          | 71<br>(22)         | 28.62<br>(96.92)              |
| 6th Gear            |                                |                        |                                 |           |   |                                      |                                      |                    |                               |
| 200.05<br>(149.18)  | 22583<br>(100.46)              | 3.32<br>(5.35)         | 1800                            | 4.39      | 0.516<br>(0.314)                          | 13.60<br>(2.68)                      | 189<br>(87)                          | 72<br>(22)         | 28.61<br>(96.88)              |
| 7th Gear            |                                |                        |                                 |           |   |                                      |                                      |                    |                               |
| 208.28<br>(155.32)  | 19899<br>(88.51)               | 3.93<br>(6.32)         | 1798                            | 3.05      | 0.497<br>(0.302)                          | 14.11<br>(2.78)                      | 188<br>(87)                          | 72<br>(22)         | 28.61<br>(96.88)              |
| 8th Gear            |                                |                        |                                 |           |   |                                      |                                      |                    |                               |
| 210.37<br>(156.87)  | 17375<br>(77.29)               | 4.54<br>(7.31)         | 1802                            | 2.42      | 0.492<br>(0.299)                          | 14.26<br>(2.81)                      | 188<br>(87)                          | 73<br>(23)         | 28.60<br>(96.85)              |
| 9th Gear            |                                |                        |                                 |           |   |                                      |                                      |                    |                               |
| 208.84<br>(155.73)  | 14892<br>(66.24)               | 5.26<br>(8.46)         | 1801                            | 1.92      | 0.495<br>(0.301)                          | 14.16<br>(2.79)                      | 188<br>(87)                          | 73<br>(23)         | 28.60<br>(96.85)              |
| 10th Gear           |                                |                        |                                 |           |   |                                      |                                      |                    |                               |
| 207.20<br>(154.51)  | 12814<br>(57.00)               | 6.06<br>(9.76)         | 1804                            | 1.58      | 0.499<br>(0.304)                          | 14.04<br>(2.77)                      | 188<br>(87)                          | 73<br>(23)         | 28.60<br>(96.85)              |
| 11th Gear           |                                |                        |                                 |           |   |                                      |                                      |                    |                               |
| 203.47<br>(151.73)  | 10931<br>(48.62)               | 6.98<br>(11.23)        | 1806                            | 1.31      | 0.508<br>(0.309)                          | 13.81<br>(2.72)                      | 188<br>(87)                          | 74<br>(23)         | 28.59<br>(96.82)              |
| 12th Gear           |                                |                        |                                 |           |   |                                      |                                      |                    |                               |
| 201.22<br>(150.05)  | 9424<br>(41.92)                | 8.01<br>(12.89)        | 1800                            | 0.99      | 0.511<br>(0.311)                          | 13.71<br>(2.70)                      | 188<br>(87)                          | 75<br>(24)         | 28.58<br>(96.78)              |

## THREE POINT HITCH PERFORMANCE(OECD Static Test)

CATEGORY: III

Quick Attach: Yes

Maximum force exerted through whole range: 14070 lb (62.6 kN) High Lift Option  
16375 lb (72.8 kN)

The following data applies after tractor chassis S/N Z7RZ05000

|  |                        |                        |
|--|------------------------|------------------------|
|  |                        | Twinflow pump          |
| i) Sustained pressure at compensator cutoff:                       | 3183 psi (219 bar)     | 2982 psi (206 bar)     |
| ii) Pump delivery rate at minimum pressure and rated engine speed: | 44.0 GPM (166.6 l/min) | 30.0 GPM (113.6 l/min) |
| Combined flow:   | 74.0 GPM (280.2 l/min) |                        |
| iii) Pump delivery rate at maximum hydraulic power:                | 42.3 GPM (160.1 l/min) | 32.1 GPM (121.5 l/min) |
| Delivery pressure:   | 3005 psi (207 bar)     | 2757 psi (190 bar)     |
| Power:   | 74.2 HP (55.3 kW)      | 51.6 Hp (38.5 kW)      |

### three outlet sets combined

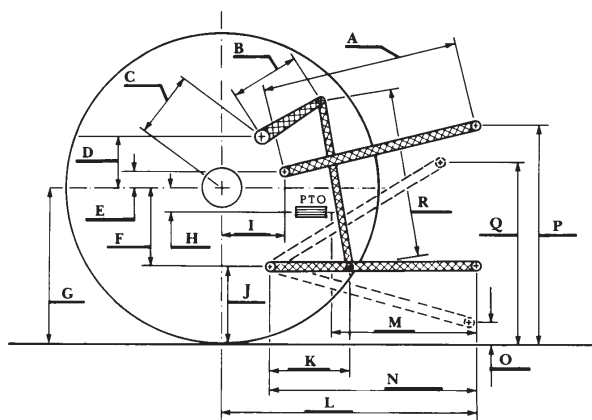
High Flow Option

|  |                        |
|--|------------------------|
| i) Sustained pressure at compensator cutoff:                       | 3106 psi (214 bar)     |
| ii) Pump delivery rate at minimum pressure and rated engine speed: | 58.1 GPM (219.9 l/min) |
| iii) Pump delivery rate at maximum hydraulic power:                | 57.0 GPM (215.8 l/min) |
| Delivery pressure:   | 2710 psi (187 bar)     |
| Power:   | 90.1 Hp (67.2 kW)      |

### HITCH DIMENSIONS AS TESTED—NO LOAD

|     | inch | mm   |
|-----|------|------|
| A   | 28.2 | 718  |
| B   | 20.5 | 520  |
| C   | 22.9 | 581  |
| D   | 20.7 | 525  |
| E   | 10.5 | 266  |
| F   | 15.7 | 400  |
| G   | 36.4 | 925  |
| H   | 3.5  | 90   |
| I   | 20.9 | 530  |
| J   | 20.7 | 525  |
| K   | 30.2 | 768  |
| L   | 46.1 | 1170 |
| *L' | 50.7 | 1287 |
| M   | 20.1 | 511  |
| N   | 38.2 | 970  |
| O   | 9.0  | 230  |
| P   | 47.6 | 1210 |
| Q   | 40.7 | 1035 |
| R   | 39.2 | 995  |

\*L' to Quick Attach ends



CASE IH MAGNUM 245 DIESEL